SN – 290

III Semester B.A./B.Sc. Examination, November/December 2014
(Semester Scheme) (Fresh) (2014–15 Only)
COMPUTER SCIENCE – III
Data Structures and Algorithms

Time : 3 Hours Max. Marks : 70

Instruction : *Answer* ***all*** *Sections.*

SECTION – A

1. Answer **any 10** questions. **Each** question carries **2** marks. **(2×10=20)**

1) Define Data structure. Name any two Data structures.

2) Define Time and space complexity.

3) What is pattern matching ? Give an example.

4) What is Recursion ?

5) What are two methods of representing 2 dimensional arrays in memory ?

6) Differentiate between linear search and binary search.

7) Explain Binary Tree.

8) What is doubly linked list ?

9) Convert the following infix expression to postfix.

(A + B) / (P – Q) * C/D.

10) What is double ended queue ? Explain briefly.

11) What is adjacency matrix ?

12) What is post-order traversal of binary Tree ?

P.T.O.

SECTION – B

II. Answer the following. **Each** question carries **10** marks. **(5×10=50)**

13) a) i) Explain circularly linked list. 6

ii) Explain how strings are stored in memory. 4

OR

b) Explain string operations.

i) Concatenation of two strings. 5

ii) Comparision of two strings. 5

14) a) i) Explain algorithm for insertion of elements into an array with an example. 5

ii) Write and explain linear search algorithm to search an element.

OR

b) i) Explain selection sort algorithm to sort the following elements
19 10 32 25 66 45 10

15) a) i) Write an algorithm to delete a node at a given position in the linked list.

ii) Explain with an algorithm to search a node in a linked list.

OR

b) i) Write a C program to implement stack operations. 10

16) a) i) Mention any four applications of queue. 4

ii) Define priority queue. 2

iii) Write an algorithm to insert an element into circular queue. 4

OR

b) i) Explain sequential representation of graphs in memory. 5

ii) Write a note on Dynamic memory allocation and Garbage collections. 5

17) a) i) Write a note on various types of graphs. 10

OR

b) i) Explain In-order Traversal algorithm with an example.

ii) Explain search and delete operation in binary search tree. 5